



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/060,052	01/28/2002	Varouj Amirkhanian	1031/209	6572

7590 11/19/2003

Wen Liu  
LIU & LIU LLP  
Suite 1100  
811 West 7th Street  
Los Angeles, CA 90017

EXAMINER
----------

SMITH, RICHARD A

ART UNIT	PAPER NUMBER
----------	--------------

2859

DATE MAILED: 11/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/060,052

Applicant(s)

AMIRKHANIAN ET AL.

Examiner

R. Alexander Smith

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Art Unit: 2859

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 1-13 are objected to because of the following informalities:

Claims 1 and 13: For each claim, the "/" in the phrase "time staggered/multiplexed" at the end of the claim should be either --and-- or --or-- in order to clarify the Applicant's intent.

Claim 11:

- a. At the end of the claim "taggered" should be --staggered--.
- b. The "/" in the phrase "time taggered/multiplexed" at the end of the claim should be either --and-- or --or-- in order to clarify the Applicant's intent.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2859

3. Claims 1-7 and 9-13 are finally rejected under 35 U.S.C. 102(b) as being anticipated by U.S. 5.324.401 to Yeung et al.

Yeung et al. discloses a bio-separation instrument comprising a plurality of channels, means for simultaneously separating samples in the separation channels into analytes, and a detection system, said detection system comprising a detection section (50, 55, 60), a plurality of radiation sources (via 15 in figures 2 and 3), excitation means (by laser beam through 15), detecting means (50), control means and the time staggered multiplexed manner (abstract and column 13, lines 11-25); the detection means being a single detector (50); the control means controlling the plurality of radiation sources to activate in successive pulses with respect to the radiation sources (column 13, lines 11-25); the control means controls the synchronization of pulsing and detection rate by accounting for lag time in adjacent channels, whereby detection of one of said channels covers a period when the associated radiation source is on with respect to the detecting means; the control means controls the detecting means at a rate and period that provides desired signal separation between the channels to reduce cross talk (Example 1 starting in column 15); the control means controls the detecting means and the radiation sources to effect the detection in predetermined detection cycles at a frequency to provide a desired detection resolution (column 9, lines 26-49; column 13, line 11 through column 14, line 6; and Example 1 starting in column 15); the control means controls the detecting means and the radiation sources in a manner to effect detection of a repeated scanning manner across the detection zones (column 13, line 11 through column 14, line 6); the analytes comprise a material that fluoresces in the presence of excitation radiation, and the detecting means comprises a means for detecting

Art Unit: 2859

fluorescence emission (column 5, lines 32-48); the radiation is at least one of fluorescence, chemiluminescence, and phosphorescence (column 6, lines 1-3); the separation channel being defined by a capillary column and the means for separating being by electrophoresis (abstract); and the method steps of claim 13 (entire specification and, in particular, the examples starting in column 15).

4. Claims 1-3 and 6-13 are finally rejected under 35 U.S.C. 102(b) as being anticipated by WO 01/02846 to Melman et al.

Melman et al. discloses a bio-separation instrument comprising a plurality of channels, means for simultaneously separating samples in the separation channels into analytes, and a detection system, said detection system comprising a detection section (figures 1 and 11), a plurality of radiation sources (16), excitation means (by laser, lasers, or LED's), detecting means (15), control means (23) and the time staggered/multiplexed manner (page 7, lines 6-27; page 11, lines 13-17); the detection means being a single detector (22); the control means controlling the plural radiation sources to activate in successive pulses in respect to the radiation sources (page 7, lines 6-27; page 8, lines 3-9; page 11, lines 13-17); the control means controls the detecting means and the radiation sources to effect the detection in predetermined detection cycles at a frequency to provide a desired detection resolution (page 12, lines 4-10); the control means controls the detecting means and the radiation sources in a manner to effect detection of a repeated scanning manner across the detection zones (page 2, lines 14 through page 3, line 20; page 4, line 13-21; page 12, lines 4-10); the radiation sources produces said excitation radiation

Art Unit: 2859

at more than one wavelength (page 12, line 26 through page 13, line 15); the analytes comprise a material that fluoresces in the presence of excitation radiation, and the detecting means comprises a means for detecting fluorescence emission (page 2, line 14 through page 3, line 2; page 12, lines 4-10); the radiation is at least one of fluorescence, chemiluminescence, and phosphorescence; the separation channel being defined by a capillary column and the means for separating being by electrophoresis (abstract); and the method steps of claim 13 (entire specification and, in particular, the method steps claimed by Melman et al., i.e., claims 22-40).

### *Response to Arguments*

5. Applicant's arguments filed 26 August 2003 have been fully considered but they are not persuasive.

With respect to time staggered/multiplexed and time staggered and/or time multiplexed detection: "/" and "and/or" is defined as used to indicate that either or both of the items connected by it are involved. This definition is provided by the American Heritage® Dictionary of the English Language, Third Edition copyright © 1992 by Houghton Mifflin Company. Electronic version licensed from INSO Corporation.

With respect to Yeung et al. and simultaneously monitoring and multiplexing as argued by the Applicant, the Applicant's arguments are not persuasive for the following reason:

Art Unit: 2859

The Applicant and the examiner have both cited various sections in Yeung et al. to support their arguments. In summarizing, both the Examiner and the Applicant have roughly cited column 9, lines 45-49 and column 14, lines 51-57 in support of their respective arguments and although Yeung et al. does state that this is true or simultaneous multiplexing as argued by Applicant, the examiner notes that Yeung et al. also discloses data rates and scan rates which inherently must be time dependent or else they would not be rates. Yeung discloses the invention as simultaneous because his invention is fast relative to conventional CGE techniques. In support of the examiner's position the examiner notes column 3, lines 28-34 where Yeung discloses that the invention . . . substantially simultaneously excite . . . substantially simultaneously monitor; column 5, line 41-48 where Yeung et al. states that his invention is considerably faster at data collection than conventional CGE techniques commonly used; column 9, lines 59-68, i.e., the charge from each detector is sequentially passed from one detector element to the next detector element and it is necessary to shift through all the detectors before proceeding to the next exposure (i.e., data rate, scan rate or time staggered); and the numerous references which refer to data rates and scan rates cited throughout the specification including columns 9 and 14 as mentioned above.

Furthermore, Yeung et al. teaches in column 13, lines 11-25 that since the bands of analytes are not passing by the detection zone continuously, that an expert system can be used to predict when and to activate laser irradiation only during the times, i.e., time staggered, when the bands of analytes are predicted to be passing the detection zone. Yeung et al. continues by describing a shutter in the beam path which works synchronously with the CCD shutter to allow light to be

Art Unit: 2859

transmitted to the capillary only during the time that the data is to be collected. This disclosure of Yeung et al. appears to meet the limitation of being a time staggered/multiplexed manner as claimed. With respect to the Applicant argument that this is a particular channel and not across many channels, these arguments are not persuasive because Yeung throughout his patent discloses scanning across many capillaries as his invention but starting in column 12 is discussing various techniques which can be used with his invention to be employed with respect to a capillary to reduce bleaching, interferences, crosstalk, etc.

With respect to the Applicant's arguments regarding Yeung et al. and a separate light source for each of the separation channels, each of a plurality of radiation sources being associated with one of said separation channels and excitation radiation is introduced at the detection zone of each channel in a predetermined sequence and the pulses: The sequence and pulses are not persuasive for the reasons as noted above. For the arguments regarding the separate radiation source for each of the separation channels, these arguments are not persuasive since Yeung et al. does disclose a radiation source associated with each of the separation channels, that is each optical fiber 15 which conducts radiation to its respective channel and an excitation means, i.e., the laser beams through the optical fiber. It appears to the examiner that the applicant is arguing that the radiation source is a radiation generating source, e.g. laser, LED, light bulb, etc. However, it is noted that the features upon which applicant relies (i.e., the radiation source being a generating type of radiation source) is not recited in the rejected claim(s). Although the claims



Art Unit: 2859

are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

With respect to Melman and Figures 1 and 11 and the Applicant's statement that "This embodiment is directed to a detection system in which multiple LED's are used for the channels.": The examiner notes that the two are different embodiments, figure 11 is as described by Applicant, but figure 1 is a singular LED employing an optical switch to transfer the beam sequentially to different optical fibers and to its respective separation channel and then discloses either a combiner or another optical switch to the detector. The examiner also notes that for each separation channel, the result of using the single source with optical splitter as shown in figure 1 or plural LED's sequentially activated to reduce noise as shown in figure 11 will be similar with respect the separation channels.

With respect to controlling the radiation sources and detecting means in a manner such that the emission from the detection zone of each channel is detected in a time staggered/multiplexed manner and that Melman is silent on the time staggered/multiplexed manner and only discloses actuation of each LED in temporal sequence to improve the signal to noise ratio: The examiner agrees that Melman is silent with respect to figure 11. Figure 11 is an alternative embodiment in which plural LED's can be used and that a single controller can actuate each LED in temporal sequence to improve the signal to noise ratio which would bring it into conformance with the single laser with optical switch as shown in figure 1. Figure 11 is also silent with respect to the computer, but figure 12 which employs the same elements in a different embodiment discloses a

Art Unit: 2859

controller and a computer connected to the computer. In figure 1 and on page 7, lines 6-22, Melman discloses a system having a light source 12 with an optical switch 18 connecting to optical fibers 16 and discloses an optical combiner or a second switch 20 that is coupled to a detector 22. This detector is then connected to a multichannel analyzer 21 and a computer 23. Melman discloses that in operation, the light from the source is coupled to fibers 16 in sequence. Time staggered is inherent in the sequencing of the light through the fibers and channels and upon the detectors whether the embodiment is that of figure 1 or figure 11.

### *Conclusion*

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2859

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Smith whose telephone number is (703) 305-0647. The examiner can normally be reached on Monday-Friday from 9:00 AM to 5:30 PM.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Diego Gutierrez  
Supervisory Patent Examiner  
Technology Center 2800

RAS  
November 17, 2003